

Introduction

There are many Quality Assurance parameters that a user of may use to filter AIRS/AMSU/HSB data to create a subset for analysis. A complete description is provided in the file, **V3.0_Release_ProcFileDesc.pdf**, which may be accessed through a link in the main **V3.0 L2 Data Release Documentation**. This document provides a quick start identification of the most basic QA parameters that a user should access before using any data for analysis.

The AIRS/AMSU/HSB retrieval system has three Level 2 products

- Cloud-Cleared Radiance Product
- Standard Physical Retrieval Product
- Support Physical Retrieval Product

The Support Physical Retrieval Product contains much information that is as yet preliminary and not validated. This product is not recommended for users who lack extensive familiarity with AIRS Products.

Quick Start QA for AIRS L2 Data

The main quality indicator for all Level 2 products is **RetQAFlag**. The user is urged to use only those L2 data for which RetQAFlag = 0 (i.e., all bits set to zero). A complete description of RetQAFlag is contained in the file, **V3.0_RetQAFlag.pdf**, which may be accessed through a link in the main **V3.0 L2 Data Release Documentation**. The RetQAFlag swath data field is present in all Level 2 Products.

All fields must be checked to ensure that the value is not one of the invalid values:

- 9999 for floating-point and 16-bit and 32-bit integers
- 1 or 255 for 8-bit fields.

Cloud-Cleared Radiances Per-Channel Quality Checks

The accuracy of the radiances in the cloud-cleared radiance product varies from channel to channel with the properties of the individual detectors. Some AIRS detector will have properties that will rule out their use for some purposes. Radiances are set to -9999 for detectors of lowest quality. The individual properties of each of the 2378 AIRS IR channels are summarized in a series of "**channel properties files**" keyed by effective start date. Please refer to the main **V3.0 L2 Data Release Documentation** for links to these files, which contain detailed characterizations of all channels.

Version 3.0 L2 QA Quick Start Documentation

Beginning users of AIRS L2 Cloud-Cleared radiances should select channels whose entries in the appropriate channel properties file satisfy these criteria at a minimum:

Criterion	column	required value
AB_State	11	0, 1 or 2
Radiometric quality	12	0
L2_ignore	13	0

Advanced Quality Checks

When bit 10 of RetQAFlag is set the retrieval accuracy in the lower atmosphere is degraded. The field “**Press_valid_bottom**” will give the pressure at the lowest atmospheric level at which the retrieval has full accuracy. Bit 10 is set when the “**sun_glint_distance**” is less than 200 km and the FOV is over water.

Quick Start QA for VIS/NIR L2 Data

Per-Field-of-View Quality Checks

The following QA flags are contained in the L2 Support product, and should be checked for a value of 0 (zero), indicating that the relevant products are valid. Each of these QA flags is at AMSU resolution:

- **bad_vis_cld_det** Set to 1 when a problem was encountered in the cloud detection algorithm
- **bad_vis_cld_hgt** Set to 1 when a problem was encountered in the cloud height algorithm. Note, however, that no cloud height products have been validated, and the user is advised to ignore these fields regardless of the flag value

Advanced Quality Checks

The following QA flags are contained in the L2 Support product, and should be checked for a value of 0 (zero), indicating that the relevant products are valid. Each of these QA flags is at AMSU resolution:

- **vis_glint** When set to 1, sun-glint may be affecting the reported Vis/NIR radiances and products